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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/687,522

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Edward J. Seppi

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06/16/2008

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EXAMINER

KISH, JAMES M

ART UNIT

PAPER NUMBER

3737

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/687,522	<b>Applicant(s)</b> SEPPI ET AL.	
	<b>Examiner</b> JAMES KISH	<b>Art Unit</b> 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-47 and 56-67 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-47 and 56-67 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/12/07, 3/6/08, 4/3/08</u> .                                | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to because the boxes should be labeled as to the elements that they represent, beyond simply being referenced by numbers. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claims 25-28, 44, 57, 59, 60 are objected to because of the following informalities:

Claims 25 and 26 state, "the x-ray source assembly." This lacks antecedent basis.

Claim 44 states, "the contrast agent." This lacks antecedent basis.

Claims 57 and 59 state, "the radiation source." This lacks antecedent basis.

Claim 60 recites "placing the radiation source at a first gantry angle, and placing the radiation source at a second gantry angle." However, there is no positive recitation of a gantry. This lacks antecedent basis.

Claim 60 provides for "the act of" while earlier claim 12 provides "the step of." The Applicant should use consistent claim language.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 29, 32-33, 36-37, 40, 43, 45-47 and 66-67 are rejected under 35 U.S.C. 102(b) as being anticipated by Ogawa et al. (US Patent No. 6,278,760). Ogawa discloses a system and method wherein cone-like radiation is irradiated from each of different directions of projection to an object, and projection image signals of different energy bands are acquired with respect to the object and each of the different directions of projection. Energy subtraction processing is performed on the projection image

signals of the different energy bands. A three-dimensional image or a tomographic image of the object is formed from the energy subtraction-processed projection image signals (see Abstract). Also see column 3, lines 1-41 and column 4, lines 45-50.

Regarding claim 37, the modification is the volume signal forming means of Figure 2.

Regarding claims 43 and 45-47, see column 6, lines 21-67.

Regarding new claim 66, see column 8, lines 5-20 (and/or Figure 2) of Ogawa.

Regarding new claim 67, see column 5, lines 47-65 (and/or Figure 1) of Ogawa.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-2, 4-7, 10-14, 17-28, 30-31, 38-39, 44, 56-59 and 61-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al. in view of Hughes et al. (US Patent No. 4,432,370). Ogawa is described above in the rejection of claims 29, 32-33, 36-37, 40, 43, 45-47 and 66-67. While Ogawa discusses the phenomenon of separating structures and substances based on having different radiation absorptivity (similar to dichromography), Ogawa does not explicitly describe the use of a contrast agent.

In a similar field of endeavor, Hughes teaches producing an x-ray image for a blood vessel by directing synchrotron radiation at first and second selected energy levels through the vessel, detecting the attenuated radiation and logarithmically subtracting the two signals. Also see column 2, lines 36-45, where digitizing the images is described. Other elements such as samarium or europium can be used as contrast agents (column 5, lines 60-64). Also see column 1, line 66 through column 2, line 7. it would have been obvious to one having ordinary skill in the art at the time of the invention to incorporate a contrast agent into the system and methods of Ogawa in order to create a high fidelity picture of the entire circulatory tree (column 2, lines 9-10 of Hughes).

Regarding new claims 62 and 64, see column 8, lines 5-20 (and/or Figure 2) of Ogawa.

Regarding new claims 63 and 65, see column 5, lines 47-65 (and/or Figure 1) of Ogawa.

Claims 1, 6-10, 14, 17, 19-21, 34-35, 39, 56-57 and 60-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al. in view of Acharya et al. (US Patent No. 6,922,462).

Ogawa is described above in the rejection of claims 29, 32-33, 36-37, 40, 43, 45-47 and 66-67. While Ogawa discusses the phenomenon of separating structures and substances based on having different radiation absorptivity (similar to dichromography), Ogawa does not explicitly describe the use of a contrast agent.

In a similar field of endeavor to that of Ogawa, Acharya teaches a system and method of plaque characterization. The method comprises obtaining a first and second set of image data at a first and second energy level and calculating a third set of image data by subtracting each second pixel element from the corresponding first pixel element (see Abstract). The method may be performed on several imaging modalities (column 4, lines 6-14). See column 4, lines 60-66 concerning different orientations. Column 6, lines 13-37 describes an embodiment of Acharya of imaging without a contrast agent, much like that of Ogawa. Column 6, lines 18-52 describes a similar procedure, except with the use of a contrast. It would have been obvious to one of ordinary skill in the art to utilize a contrast agent in the methods and systems of Ogawa in order to view and analyze the soft tissue portion of non-calcified plaque (column 6, lines 51-52 of Acharya).

Regarding new claims 62 and 64, see column 8, lines 5-20 (and/or Figure 2) of Ogawa.

Regarding new claims 63 and 65, see column 5, lines 47-65 (and/or Figure 1) of Ogawa.

Claims 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al. in view of Trauernicht (US Patent No. 5,629,968). Ogawa in is previously described in the rejection of claim 40. However, there is no discussion of the manner in which the images are initially detected. Trauernicht discloses an apparatus and method for obtaining radiographic images of an object. Figure 3 shows two detectors separated by a beam stop device. The first detector receives the entire radiation dose. The beam stop "deactivates" certain lines of the second detector by not allowing those radiation beams to pass through it. These two images may be combined in registration to provide a composite image of enhanced quality relative to that of the two components (column 5, lines 8-23 and lines 44-49). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a beam stop, as taught in Trauernicht, in the system of Ogawa to prevent certain lines of radiation to proceed to a detector in order to gain a composite image with enhanced quality.

Claims 3 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al. in view of Hughes et al., as applied to claims 1 and 14 above, and

further in view of Trauernicht. Ogawa in combination with Hughes is previously described. However, there is no discussion of the manner in which the images are initially detected. Trauernicht discloses an apparatus and method for obtaining radiographic images of an object. Figure 3 shows two detectors separated by a beam stop device. The first detector receives the entire radiation dose. The beam stop “deactivates” certain lines of the second detector by not allowing those radiation beams to pass through it. These two images may be combined in registration to provide a composite image of enhanced quality relative to that of the two components (column 5, lines 8-23 and lines 44-49). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a beam stop, as taught in Trauernicht, in the system of Ogawa in view of Hughes to prevent certain lines of radiation to proceed to a detector in order to gain a composite image with enhanced quality.

### ***Response to Arguments***

Applicant's arguments, see pages 10-11, filed March 10, 2008, with respect to the rejection(s) of claim(s) 1, 7, 22, 29 and 33 under Section 102 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the newly cited prior art, Ogawa et al. (US Patent No. 6,278,760).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES KISH whose telephone number is (571)272-5554. The examiner can normally be reached on 8:30 - 5:00 ~ Mon. - Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ruth S. Smith/  
Primary Examiner, Art Unit 3737

JMK